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10-18-2019

## **Applying Evidence-based Research Principles in Review Design: Supporting Graduate and Faculty Research in the Life Sciences**

Chris Fournier  
*Cornell University*

Kate Ghezzi-Kopel  
*Cornell University*

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### **Recommended Citation**

Fournier, Chris and Ghezzi-Kopel Kate "Applying Evidence-based Research Principles in Review Design: Supporting Graduate and Faculty Research in the Life Sciences" (2019). Upstate New York Science Librarians Conference.

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# Applying Evidence-based Research Principles in Review Design: Supporting Graduate and Faculty Research in the Life Sciences



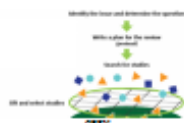
Applying Evidence-based Research Principles in Review Design:  
Supporting Graduate and Faculty Research in the Life Sciences  
Chris Fournier and Kate Ghezzi-Kopel  
Cornell University Library



## Background



"Do you really want to do a  
systematic review?"



## Evidence-based Review Checklist



## Systematic Review Team



## Systematic Review Team



Chris Fournier and Kate Ghezzi-Kopel

Cornell University Library



PRESENTED AT:

## BACKGROUND



Through CUL's research consultation service and classroom instruction support, we identified a need for training of patrons who are preparing literature reviews across science and social sciences disciplines.

These literature reviews are written for graduate theses, for a class assignment, or for publication as a review article.

Based on our experience supporting systematic reviews, we wanted to provide evidence-based guidance for development of any kind of literature review, not just systematic reviews.

We have drawn from standardized guidelines such as PRISMA-P (<http://www.prisma-statement.org/documents/PRISMA-P-checklist.pdf>) to create a checklist that guides patrons through the creation of a reproducible, unbiased, transparent literature review plan (or protocol).

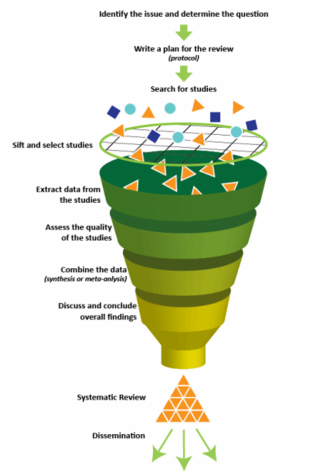
**Systematic Review:** A methodical and comprehensive literature synthesis focused on a well-formulated research question. Its aim is to identify and synthesize all of the scholarly research on a particular topic, including both published and unpublished studies.

**Literature Review:** A broad term referring to reviews with a wide scope and non-standardized methodology.

Checklist Reference

<https://casp-uk.net/casp-tools-checklists/> (<https://casp-uk.net/casp-tools-checklists/>)

## "DO YOU REALLY WANT TO DO A SYSTEMATIC REVIEW?"



### Frequently Asked Questions:

*"My professor told me I need to do a systematic review for this class. How do I get started?"*

*"I'm not doing a full systematic review but I want to do it right, so what should I call this review?"*

*"How many databases do I need to search to find everything?"*

*"How do I explain how I did my search in the paper?"*

How many times have reference and liaison librarians encountered these questions? We find that many patrons think they want to do a systematic review, until we work through the Prisma-P checklist or explain the Cochrane graphic (<https://cccrh.cochrane.org/infographics>) above. Yet, no one wants to do a "non-systematic review". Using this checklist to conduct a literature review, along with a record of the planned work, ensures reproducibility and transparency, while reducing bias.

Our checklist focuses on adapting exhaustive systematic review techniques for beginners, and a result, it does sacrifice some rigor. However, the checklist provides a useful framework in teaching, consultations, and reference interviews with patrons interested in completing structured literature reviews. Introducing evidence-based literature review guidelines in a digestible format also provides an opportunity to teach steps required to ensure reproducibility in response to growing demands across disciplines.

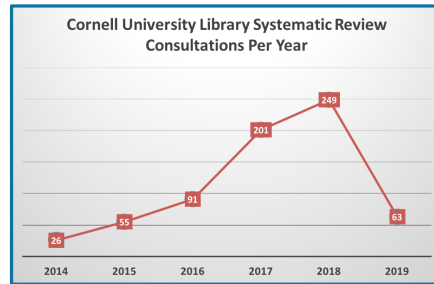
Librarians in academic institutions can play a key role in promoting improved adherence to evidence-based guidelines for performing literature reviews by adopting these practices.

# EVIDENCE-BASED REVIEW CHECKLIST



Download a PDF of the full-length version checklist. (<https://osf.io/2edg9/>)

# SYSTEMATIC REVIEW TEAM



Cornell University Library's systematic review service was developed in 2015 and provides consultation and co-authorship services to Cornell patrons performing systematic reviews of the literature.

Our team consists of 7 librarians representing a variety of subject expertise areas.

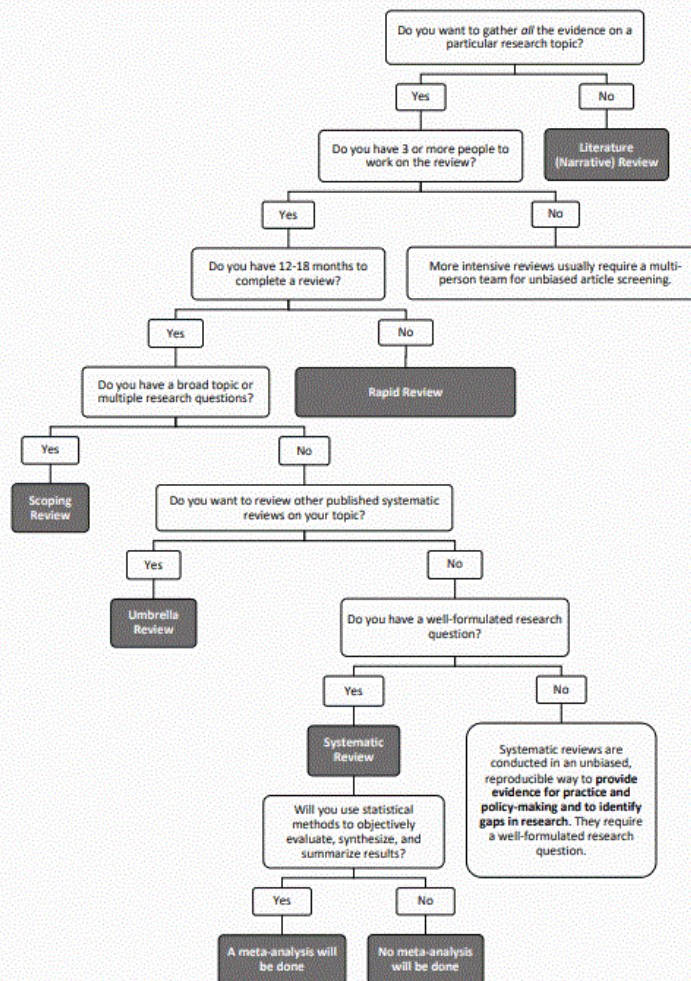
The need for librarian support of systematic reviews beyond the health sciences is growing steadily, particularly among research institutions that serve agriculture and life sciences disciplines. The number of consultations we provide annually has increased from 62 in 2015, to 249 in 2018.

Most patrons using our service *do not* go on to do a full systematic review, but are seeking a more structured and evidence-based approach to a traditional literature review. This checklist is one tool we have developed in response to this need. Another tool is a decision tree ([https://guides.library.cornell.edu/systematic\\_reviews/evidence\\_synthesis](https://guides.library.cornell.edu/systematic_reviews/evidence_synthesis)) to help patrons determine which type of study best suits their needs (see below).

## What Type of Review is Right for You?



Cornell University Library





# SYSTEMATIC REVIEW TEAM

## CONTACT US



The Systematic Review Team:

Top Row-

**Chris Fournier**, Mann Library - [ctf43@cornell.edu](mailto:ctf43@cornell.edu)

**Jim Morris-Knower**, Mann Library - [jpk15@cornell.edu](mailto:jpk15@cornell.edu)

**Kelly Johnson**, Flower-Sprecher Veterinary School - [kaj98@cornell.edu](mailto:kaj98@cornell.edu)

Middle Row-

**Kate Ghezzi-Kopel**, Mann Library - [kwg37@cornell.edu](mailto:kwg37@cornell.edu)

**Sara Scinto-Madonich**, Mann Library - [srs434@cornell.edu](mailto:srs434@cornell.edu)

**Erin Eldermire**, Flower-Sprecher Veterinary School - [erb29@cornell.edu](mailto:erb29@cornell.edu)

Bottom Row-

**Amelia Kallaher**, Mann Library - [aak98@cornell.edu](mailto:aak98@cornell.edu)

## AUTHOR INFORMATION

Chris Fournier joined Cornell University's Albert R. Mann Library as Life Sciences Librarian for Research in 2015. She serves as liaison to Animal Sciences, Plant Biology, Plant Breeding and Genetics, and Biological Statistics and Computational Biology. She is also a member of the Cornell Systematic Review Team where she specializes in providing support for reviews in the natural sciences. Chris received her Masters degree in Sustainable Development and Conservation Biology from the University of Maryland, College Park. Before becoming a librarian, Chris was coordinator for I3N databases and liaison to international programs for the National Biological Information Infrastructure of the U.S. Geological Survey.

Kate Ghezzi-Kopel is Health Sciences and Evidence Synthesis Librarian at Cornell University's Albert R. Mann Library. She is the liaison to the Cornell Department of Human Development and the Division of Nutritional Sciences. As coordinator of the Cornell University Library Systematic Review Service, Kate provides evidence synthesis methodology guidance and instruction across disciplines at Cornell, and works with global initiatives to expand systematic review training for librarians and researchers. Kate received her Masters degree in Library and Information Science from Syracuse University. Before becoming a librarian, Kate was an acquisitions editor for academic books.



# ABSTRACT

The reproducibility crisis in published scientific work is changing the way that research is conducted and published. Librarians in academic institutions can play a key role in promoting transparency, reduction of bias, and improved reproducibility in research. We provide a checklist for researchers on best practices based on standard, evidence-based literature review development guidelines.

Protocol checklists can be used by librarians as a conversation framework when assisting patrons who are designing literature reviews. These checklists aim to reduce cognitive bias, and the preregistration of completed protocols leads to openness around rationale, hypothesis, and planned methods for executing the review.